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10 February 1981

Thomas Electronics, Inc.  
100 Riverview Drive  
Wayne, NJ 07470

## FIRST QUARTERLY REPORT

for period

1 October 1980 - 31 January 1981

Approved for public release; distribution unlimited

## Manufacturing Methods and Technology (MM&T) Specifications for Miniature Cathode Ray Tube

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Miniature Cathode Ray Tube

FIRST QUARTERLY REPORT

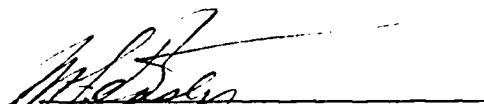
for period

1 October 1980 - 31 January 1981

The object of this study is to develop design, performance, and test specifications for Miniature Cathode Ray Tube (CRT) assembly suitable for use in the Integrated Helmet and Display Sight System (IHADSS) of the Army Advanced Attack Helicopter (AAH).

AMC Contract Number: DAAK70-80-C-0168

Approved by:



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Vice President - Engineering

Approved by:



F. M. Bruno  
Program Manager

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#### ABSTRACT/SUMMARY

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An alternate design was proposed for the neck shield. This design encapsulates the anode lead within the shield in order to decrease the possibility of damage due to handling and installation. Materials have been received, inspected, and are available for fabrication and test of the first engineering sample during the next quarter - 1 February 1981 through 30 April 1981.

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## Section I. PURPOSE

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The purpose of this Manufacturing Methods and Technology (MM&T) contract is to establish production methods and facilities required to produce the Miniature Cathode Ray Tube Assembly required for the Integrated Helmet and Display Sight System of the Army Advanced Attack Helicopter.

The primary objectives are to develop vendor sources for the required individual components and establish viable production techniques to meet the necessary monthly production rate. The product produced will be required to meet the mechanical, electrical and environmental parameters of MM&T H799838.

## Section II. GLOSSARY

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CRT	Cathode Ray Tube
EM	Equipment Manufacturer
MM&T	Manufacturing Methods and Technology

### Section III. NARRATIVE AND DATA

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1.0 DEVICE. The TEI Part Number 1M40P43MFO has been assigned to the one inch CRT assemblies which will be fabricated for the Miniature CRT Assembly MM&T Program under Contract No. DAAK70-80-C-0168. To facilitate production of engineering samples, some stock materials presently available from a similar program have been allocated for Phase I.

1.1 STRUCTURE. The miniature CRT assembly defined in Specification H799838 consists of a miniature CRT, deflection coil, magnetic shield, anode lead and associated flying leads. The components are assembled, encapsulated, finished and tested in accordance with the processes and procedures to be detailed in future quarterly and other related reports.

1.2 PROBLEM AREAS AND SOLUTIONS. Prior to beginning fabrication of the first engineering sample to be submitted for Phase I, alternate design for several areas must be considered.

1.2.1 Neck Shield. TEI proposes a neck shield configuration with a maximum diameter of .770 inches (19.59 mm). This design would provide for the encapsulation of the anode lead within the shield and continue to meet the drawing requirement of 20.32 mm maximum. The encapsulation of the anode lead would decrease the possibility of damage due to handling and installation procedures and also improve the safety and reliability characteristics of the CRT assembly.

A sample of this design has been submitted to the EM and found

acceptable for installation purposes.

1.2.2 Deflection Coil. TEI is working with its vendor in striving to meet the deflection coil requirements. Two yoke designs have been fabricated and tested, which do not meet the specification characteristics. In addition to working with the yoke vendor on alternative designs, TEI has also reviewed possible deflection amplifier modifications with the EM. A reduction of the yoke diameter would improve the sensitivity parameter. However, this would require decreasing the CRT diameter in the yoke zone to meet the deflection coil requirements.

CRT assemblies with representative samples of the two (2) deflection coil designs were submitted to the EM for system evaluation. The result of this evaluation was that the "-1" configuration was more compatible with the system requirements. The characteristics of the "-1" yoke to be used are shown in the following table:

	RESISTANCE-ohms	INDUCTANCE- $\mu$ h	SENSITIVITY @7KV
HORIZONTAL	1.754	120	9.5mm @ .778 Amp.
VERTICAL	1.851	144	9.5mm @ .749 Amp.

1.2.3 Other Materials. All other component items, i.e., funnel neck, fiber optic faceplate, funnel shield, leads, electron gun parts, etc., are available for the Engineering Samples.

#### Section IV. CONCLUSIONS

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Materials are available to produce the first engineering sample and satisfy the requirements of Section C.2.2 of the MM&T contract. Therefore, this task will be undertaken within the next reporting period.

Investigations will continue into the possible development of a deflection coil that will satisfy all of the specification characteristics.

## Section V. PROGRAM FOR NEXT INTERVAL

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1. Fabricate, test and ship the first engineering sample and test report.
2. Continue investigation into the possible development of a compliant deflection coil.
3. Prepare and submit the engineering sample test plan.
4. Fabricate, test and ship the second engineering sample submission.
5. Begin preparation of Confirmatory Sample Process Specifications.

## Section VI. IDENTIFICATION OF KEY PERSONNEL

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